:TAILED DESCRIPTION

)etailed Description of the Invention]

,0001]

[Field of the Invention] This invention relates to a car antitheft device, especially relates to the car antitheft device of special cars, such as a cash transport truck.

[0002]

[Description of the Prior Art] Conventionally, the thing equipped with the antitheft device is known in the transport vehicle which deals with valuables, such as a cash transport truck. This antitheft device should just leave the car concerned, after [to which it hid and crew did ON actuation of the switch at the case in an emergency] being formed in a car. Then, by ON actuation of said hiding switch, when an ignition key is taken, after making it an antitheft device run to distance without a possibility that harm may befall crew, it stops an engine and makes transit of a car impossible.

[0003]

[Problem(s) to be Solved by the Invention] However, when it not necessarily hides in the case in an emergency and the ON actuation of the switch cannot be carried out, crew cannot understand an emergency, but may be in a panic condition, may hide calmly, and may be unable to switch on. Furthermore, when there is crew outside a vehicle, said thing [carrying out hidden switch-on actuation] is impossible, and there is no way which will be made if an ignition key is taken.

[0004] Moreover, an immobilizer system exists as equipment for theft prevention of an automobile conventionally. Said immobilizer system is installed in a car side with the transponder which is built in an ignition key and transmits identification code, and receives this identification code, and engine starting consists of controllable receivers. And if the identification code of a receiver beforehand remembered to be the received identification code corresponds, it permits engine starting. Therefore, by the key which cannot send this identification code, an engine cannot be started and the theft of an automobile can be prevented.

[0005] However, since the transponder is built in the ignition key, even if it only applies this to the above-mentioned special car in the above immobilizer systems, if an ignition key is taken like the above-mentioned conventional antitheft device, there will be no cure. [0006] This invention is made paying attention to the trouble which exists in the above-mentioned conventional technique, and the purpose is in offering the car antitheft device which does not have ride away with a car, unless the object which crews other than an ignition key have is taken. Moreover, it is made for other purposes to run to the distance in which harm does not befall crew, and they are to offer the car antitheft device which can be made to suspend a car.

[0007]

[Means for Solving the Problem] To claim 1 in order to attain the above-mentioned purpose in invention The transponder which sends the identification code for immobilizers in response to supply of electric energy from the power transmission means which was attached in the object which men, such as add-on of clothing and clothing, footwear, and a glove, can carry out, and has been arranged at the car side, It is arranged at a car side and has the receiver for immobilizers which receives the identification code for the said immobilizers. When the identification code for immobilizers which a transponder sends, and the identification code for immobilizers set to the car side are in agreement, the car antitheft device which enables operation of a car is made into the summary.

[0008] In invention of a claim, in claim 1, said receiver for immobilizers makes the summary the car antitheft device which judged whether the identification code for immobilizers which a transponder sends, and the identification code for immobilizers set to the car side would be in agreement, after having a transit authorization means to permit transit of predetermined time or predetermined distance from the time of engine starting of a car and canceling authorization of a transit authorization means.

[0009] In invention of claim 3, in claim 2, said receiver for immobilizers is equipped with an engine rotational frequency judging means to judge whether the engine rotational frequency has reached more than the predetermined rotational frequency, after putting an engine into operation, and when an engine

ional frequency is more than a predetermined rotational frequency, the transit authorization means
s the summary the car antitheft device which gives transit authorization of predetermined time.
)] (Operation) In invention of claim 1 of the above-mentioned configuration, crew gets into [a
t sits down in a seat, and correspondence arrangement of the object which said crew can carry out
ied out at a power transmission means. Then, a transponder sends the identification code for
ilizers in response to supply of electric energy from a power transmission means.
| The receiver for immobilizers arranged at the car side receives this identification code for
bilizers. And operation of a car is attained only when the identification code for immobilizers
a transponder sends, and the identification code for immobilizers set to the car side are in
ent.
When crew separates from the car concerned in an emergency, the identification code for
zers is not sent and an immobilizer receiver does not receive the identification code for
zers. For this reason, operation of a car serves as impossible. Therefore, the theft of a car can be
d.
In invention of claim 2, a transit authorization means permits transit of predetermined time or
etermined distance from the time of engine starting of a car. After authorization of a transit
thorization means is canceled, an immobilizer receiver judges whether the identification code for
mmobilizers which a transponder sends, and the identification code for immobilizers set to the car side are in agreement, and when not in agreement, it stops operation of a car.

[0014] In invention of claim 3, an engine rotational frequency judging means judges whether the engine rotational frequency has reached more than the predetermined rotational frequency, after an engine starts. When an engine rotational frequency is more than a predetermined rotational frequency, as for a transit authorization means, a transit authorization means gives transit authorization [predetermined time]. Consequently, it can leave the crew made into desertion at the case in an emergency relatively to a distance safe from a car by making it predetermined-time-rough-run a car above a predetermined period rotational frequency.

[0015]

[Embodiment of the Invention] Hereafter, the operation gestalt which materialized the car antitheft device of this invention is explained with reference to drawing 1 - drawing 4 .

[0016] Drawing 2 shows the cross section of the cash transportation automobile 1. Moreover, drawing 3 shows the accelerator pedal 2 of the cash transportation automobile 1. As for a steering and 4, in this drawing 2 , 3 is [steering shaft covering and 5] driver's seats.

[0017] As shown in drawing 2 and drawing 3 , the transponder 11 as a transmitter is contained by the bottom of the shoes 7 as footwear which crew 6 is putting on. This transponder 11 can send the identification code for immobilizer systems (it considers as an IMOBI code hereafter).

[0018] The receiver 12 as a receiver for immobilizers is formed in the car side, and ability ready for receiving constitutes the code sent from said transponder 11. The 13 horn fuel injection equipment 21, the headlight 22, and the ignition switch 14 are connected to said receiver 12. A fuel injection equipment 13 controls the fuel injection of the car engine 15. It detects that it was arranged by the key cylinder which is not illustrated, and the ignition key 1 was inserted in the key cylinder, and rotation actuation of the ignition switch 14 was carried out in the location of ignition-on (engine start).

[0019] Explanation of said receiver 12 forms the antenna coil 17 which serves as the coil for power transmission in the accelerator pedal 2 (shown in drawing 3). The amplifier 18 for IMOBI codes is connected to the electronic control 16 for IMOBI (henceforth IMOBI ECU), and the IMOBI code which said transponder 11 sends through antenna coil 17 is received. Moreover, the amplifier 18 for the said IMOBI codes makes a digital signal the received IMOBI code, and inputs it into IMOBI ECU 16.

[0020] And said IMOBI ECU 16 has memorized the IMOBI code beforehand. This IMOBI ECU 16 carries out the comparison test of the inputted IMOBI code and the IMOBI code set up beforehand. This IMOBI ECU 16 operates a fuel injection equipment 13 based on said judgment result. Moreover, IMOBI ECU 16 operates the magnetic-flux generating circuit 19 based on the detection result by the ignition switch 14. The magnetic-flux generating circuit 19 changes the generated magnetic flux while it

s with said antenna coil 17 and it makes this antenna coil 17 generate magnetic flux. Moreover, ne speed sensor 20 is connected to IMOBI ECU 16, and an engine speed signal NE is inputted engine speed sensor 20.

Moreover, said IMOBI ECU 16 constitutes the transit authorization means and the engine al frequency judging means. As shown in drawing 1 , said transponder 11 is equipped with the ılation-of-electricity section 25 and the accumulation-of-electricity circuit 26 which consist of a for power receiving, a capacitor, etc., and the transponder IC 27. The coil 24 for power receiving id antenna coil 17 in the condition that crew 6 has hit against the accelerator pedal 2 through as shown in drawing 3 , and it generates electromotive force according to the mutual agnetic-induction operation between this antenna coil 17. The accumulation-of-electricity stores electricity the electromotive force generated by the coil 24 for power receiving at the ion-of-electricity section 25. The transponder IC 27 has memorized the IMOBI code J. And this transponder IC 27 will send an IMOBI code through the coil 24 for power s with the power, if said accumulation-of-electricity section 25 stores electricity the power more redetermined electrical potential difference (a dotted line shows).

The immobilizer system is constituted by said transponder 11, said antenna coil 17, the amplifier IMOBI codes, IMOBI ECU 16, and the magnetic-flux generating circuit 19.

] Next, an operation of this operation gestalt is explained. Crew gets in the cash transportation obile 1, does, inserts an ignition key in a key cylinder, and makes it start by the engine starter does not illustrate an engine 15 by the rotation actuation. After the completion of starting, said 15 operates by the drive of the fuel injection equipment 13 by control of the engine electronic ol which is not illustrated.

24] Drawing 4 shows the flow chart which IMOBI ECU 16 performs during the above-mentioned gine 15 actuation. In addition, this flow chart is started, when an ignition key is inserted in a key linder and it becomes ignition-on by that rotation actuation.

0025] If said ignition-on is detected by the ignition switch 14 (step 10 and a following step are called 3), it will judge whether next, it shifted to S20 and the engine speed (engine rotational frequency) NE has reached more than the predetermined rotational frequency (the gestalt of this operation 2000rpm). In being under a predetermined rotational frequency, it carries out the loop formation of S20. Said S20 constitutes an engine rotational frequency judging means by which an engine rotational frequency judges whether it is a predetermined rotational frequency.

[0026] In being more than a predetermined rotational frequency, this judgment of S20 is set to "YES", and it carries out predetermined time timer actuation in S30. In the emergency, crew is in the condition made into desertion, and in the time amount of this timer actuation, this cash transportation automobile 1 runs above said predetermined rotational frequency, and let it be the time amount it can run to the distance which can maintain crew's insurance made into desertion. With the gestalt of this operation, it is considering as for 1 minute. After carrying out predetermined time timer actuation in S30 as mentioned above, it shifts to S40. S30 constitutes a transit authorization means.

[0027] Moreover, in said S10, if said ignition-on is detected by the ignition switch 14, IMOBI ECU 16 will operate the magnetic-flux generating circuit 19. Therefore, while magnetic flux is generated by antenna coil 17, the generated magnetic flux changes.

[0028] Here, the coil 24 for power receiving of a transponder 11 faces the antenna coil 17 with which this accelerator pedal 2 was equipped, when the shoes 7 equipped with the transponder 11 to the accelerator pedal 2 are contacted. Therefore, electromotive force is generated by the coil 24 for the said power receiving according to the mutual electromagnetic-induction operation between the antenna coil 17 mentioned above. The accumulation-of-electricity circuit 26 stores electricity the electromotive force generated by this power receiving coil 24 at the accumulation-of-electricity section 25. If ****** of the accumulation-of-electricity section 25 becomes beyond a predetermined value, as for a transponder IC 27, only predetermined time will send an IMOBI code through the coil 24 for power receiving. A receiver 12 receives the IMOBI code sent from the transponder 11.

[0029] And in S40, IMOBI ECU 16 compares the received IMOBI code with the IMOBI code set up

beforehand. When an IMOBI code is in agreement here, the loop formation of S10-S40 is carried out to S10 return and henceforth.
[0030] or [that IMOBI ECU 16 is not in agreement in said S40 as a result of comparing the received IMOBI code with the IMOBI code set up beforehand] -- or When there is no reception of an IMOBI code, while actuation of a fuel injection equipment 13 is cut by IMOBI ECU 16 and making actuation of an engine 2 into impossible, after carrying out singing of the horn 21 and making a headlight 22 turn on (S50), this flow chart is ended.
[0031] Consequently, the cash transportation automobile 1 will be in the condition of having stopped with the horn 21 and the headlight 22 operating. The following effectiveness is done so in this operation gestalt of the above-mentioned configuration.
[0032] (**) a ****** [that the IMOBI code is in agreement after carrying out predetermined time actuation of the timer with the gestalt of this operation, when an engine speed NE is more than a predetermined engine speed] -- or it judged whether the IMOBI code would be received. Consequently, in an emergency, after running to the distance which can maintain the insurance of the crew by whom the cash transportation automobile 1 was made desertion where crew is made into desertion, transit of the cash automobile 1 can be suspended. Therefore, while being able to make into insurance the crew made into desertion, since operation of a car becomes impossible, after predetermined time transit can prevent the theft of a cash automobile.
[0033] (**) Moreover, when an IMOBI code was not in agreement, the horn 21 and the headlight 22 were made to operate with a halt of an engine with the gestalt of this operation. Consequently, the location of the stolen cash transportation automobile can be checked easily.
[0034] (**) Moreover, with the gestalt of this operation, the immobilizer 11 has been arranged at the bottom of the shoes which cannot be checked by looking from the outside. Consequently, in an emergency, crew can only come down from the cash transportation automobile 1, when it becomes panic and cannot do at all, he can make it only able to run the cash transportation automobile 1, and can stop transit of the cash transportation automobile 1 behind.
[0035] (The 2nd operation gestalt) Next, with reference to drawing 5 , the 2nd operation gestalt is explained centering on a different place from the 1st operation gestalt.
[0036] In addition to the configuration, with the gestalt of this operation, the receiver 12 as a receiver for immobilizers is further formed in the gestalt of said operation at the floor (not shown) of a passenger seat. And the transponder 11 is contained by the bottom of the shoes of the crew who sits down to a passenger seat as well as the crew who sits down to a driver's seat 5.
[0037] And he is trying for IMOBI ECU16A of the receiver 12 formed in the floor of a passenger seat as shown in drawing 5 to input a judgment signal with the IMOBI code in agreement to IMOBI ECU 16 of the receiver 12 formed in the drivers side. It detects whether the IMOBI code of IMOBI ECU 16 of the receiver 12 of a drivers side received in the receiver 12 of a passenger side by this judgment signal corresponded with the IMOBI code set up beforehand. That is, when the IMOBI coat is in agreement, it becomes the signal of a coincidence judging.
[0038] An operation of the above-mentioned 2nd operation gestalt is explained. With this operation gestalt, the judgment in S40 of the flow chart of drawing 4 differs from the 1st operation gestalt.
[0039] That is, in S40 of this operation gestalt, when the IMOBI code received in the receiver 12 of a drivers side is a coincidence judging and the IMOBI code received in the receiver 12 of a passenger side is a coincidence judging, the judgment of IMOBI ECU 16S40 is set to "YES", and when that is not right, it judges with "NO" and shifts to S50.
[0040] Therefore, with this operation gestalt both, when the crew of not only the crew of a driver's seat but a passenger seat has not got on, and predetermined time progress is carried out after engine starting, a car will carry out a transit halt.
[0041] (**) With this operation gestalt, since transit will be suspended if crew has not taken a driver's seat and a passenger seat, when either is made into desertion the case in an emergency, transit of a car can be suspended.
[0042] In addition, the mode of the following [the range which does not deviate from the meaning of

this invention] can also be carried out.
(A) With said operation gestalt, although the antenna coil 17 as a power transmission means was formed in the accelerator pedal 2, as shown in drawing 6 , the back of a driver's seat 5 also hangs down the antenna coil 17 as a power transmission means, and it may prepare it in 5a or the steering shaft covering 4. When a transponder 11 is attached in the posterior part of a belt 28 when antenna coil 17 is formed in back board 5a of a driver's seat 5, and antenna coil 17 is formed in the steering shaft covering 4, a transponder 11 prepares ** attachment or a receipt pocket in the kneecap part of trousers 29, and contains it in this receipt pocket.
[0043] Moreover, antenna coil 17 may be formed in the head-lining partial rear-face side (not shown) located above a driver's seat 5. In this case, a transponder 11 is contained so that it may not be visible from the outside in the upper part of the hat which crew wears.
[0044] (B) Although the antenna coil 17 which is a power transmission means was formed in the accelerator pedal 2 with said operation gestalt, antenna coil 17 may be formed in a non-driver's seat. Specifically, you may prepare in a passenger seat or a backseat. In forming the power transmission means of antenna coil 17 grade in a non-driver's seat, it prepares in the medial surface of a floor, a floor mat or head lining, the back board of a seat, a door, or a car body etc.
[0045] And when a power transmission means is formed in the above-mentioned floor and a floor mat, a transponder is prepared in the bottom of shoes, or a shoelace like the gestalt of the 1st operation. When a power transmission means is formed in head lining, it prepares in a hat. A transponder is attached in the flank of a belt when it prepares in the medial surface of a door or a car body.
[0046] (C) in addition with the object which people can carry out Besides the above-mentioned shoes, trousers, a hat, and a belt, a shirt, a coat, a glove, or the add-on of clothing, Moreover, the identification card which can mention enrichment etc. and goes into the pocket of dress further, a bag and writings -- putting in -- etc. -- the object carried and made -- it is -- ****ing -- what is necessary is for it not to turn out that the transponder is contained and just to have done it from the exterior, preferably, that what is necessary is just the object which people can carry out in short
[0047] Moreover, especially the crew that gets into [special cars such as a cash transportation automobile,] is in the crew who teaches the transponder beforehand to the uniform and wears in order to wear a uniform (uniform) in many cases. The effectiveness becomes large, when it applies without telling a thing to that effect.
[0048] (D) With said operation gestalt, although shape was taken to the car antitheft device of a cash transportation car, shape may be taken on the high car of public responsibility, such as urgent cars, such as police cars, such as other valuables transportation cars and a police car, an ambulance, and a motor fire engine, etc. In this case, since these cars are equipped with the revolving light, you may make it IMOBI ECU rotate this revolving light, when a transit halt is carried out.
[0049] (E) With said operation gestalt, when an IMOBI code was unreceivable, or when an IMOBI code was not in agreement, it was made to carry out an actuation halt of the engine, but when it applies to the electric vehicle equipped with the drive motor, it may be made to carry out an actuation halt of the drive motor. In addition, in the case of a drive motor, the engine rotational frequency NE means a motor rotational frequency.
[0050] (F) Although it was made to carry out predetermined time transit when an engine speed NE was more than a predetermined rotational frequency instead, you may make it make it run predetermined distance after engine starting with said operation gestalt. In this case, mileage is found when IMOBI ECU 16 calculates based on the periphery length of the engine engine speed inputted each time and the tire of the car set up beforehand. And when IMOBI ECU 16 compares this mileage with the predetermined mileage set up beforehand and predetermined mileage is reached, it may be made to shift to S40. In this case, IMOBI ECU 16 constitutes a transit authorization means to permit transit of predetermined distance.
[0051] Since it turns out how far it can run from the point which the emergency produced since the distance which can run the stolen car turns into predetermined mileage by carrying out like this the case in an emergency in distance, discovery of a subsequent theft car can be easily performed rather than the

case where predetermined time transit is carried out. That is, when carrying out predetermined time transit, an engine rotational frequency is not fixed, and since there is fluctuation, the distance which can run by predetermined time may be unable to be specified, either. In making it run predetermined distance, there is no such thing.

[0052] (G) Although IMOBI ECU 16 of a drivers side inputted the judgment signal with the IMOBI code in agreement from IMOBIECU16A of a passenger side with said 2nd operation gestalt, IMOBI 16 and ECUs 16A of both the receiving circuits 12 may be connected to the input terminal of an AND circuit. And when that is not right, both AND circuits are good also as a configuration which carries out halt control of the actuation of a fuel injection equipment 13, while carrying out admissible control of the actuation of a fuel injection equipment 13, in being the signal of the purport which is in agreement with the IMOBI code to which the judgment signal of the IMOBI code from both IMOBI ECU 16 was set.

[0053] (H) With said 2nd operation gestalt, although prepared in the driver's seat and the passenger seat, respectively, an immobilizer receiver may be arranged, respectively to each appointed number place of all the seats where crew sits down. In this case, the crew who sits down on each seat may wear the object which is the power transmission means formed in that seat and with which the transponder was taught so that it might correspond to antenna coil. Unless all crews take all seats by carrying out like this, a car will carry out a transit halt.

[0054] Technical thought other than the claim which can be grasped from the above-mentioned operation gestalt is indicated.

(1) A power transmission means is a car antitheft device according to claim 1 or 2 arranged in the location which approaches most the spatial position in which a transponder is located when people sit down in a seat with which the car was equipped. The power transmission means is arranged in the location which approaches most the spatial position in which a transponder is located, when people sit down in a seat of a car. Therefore, a transponder can do supply receptacle ****** of electric energy efficiently.

[0055] (2) A transponder is a car antitheft device given in either among claims 1 by which it is attached at least in either and the power transmission means is formed in the accelerator pedal side of a car, the floor side of a car or a driver's seat, steering shaft covering, and head lining corresponding to the aforementioned transponder thru/or claims 3 of footwear, a belt, trousers, or a hat. Unless the object with which what attached the transponder by carrying out like this was taken, and the transponder was attached is worn like crew, the effect of the invention of claim 1 is obtained.

[0056] (3) A transponder is [claim 1 characterized by being attached in check-by-looking impossible from the exterior thru/or 3 or the above (1) thru/or] a car antitheft device given in either among (2). Since a transponder cannot check by looking from the outside, it is effective in the ability not to know that the antitheft device is installed in a car.

[0057] (4) A power transmission means is a car antitheft device given in either among claim 1 prepared so that it might correspond to the transponder attached in the object which each crew who sat down in two or more seats puts on, respectively thru/or claim 3. [two or more] By carrying out like this, a power transmission means can supply electric energy to the transponder attached in the object which each crew who sat down in two or more seats puts on, respectively.

[0058] (5) The receiver for immobilizers is a car antitheft device given in the above (4) which enables operation of a car only when the identification code for immobilizers which the identification code for immobilizers to which two or more identification codes for immobilizers which said each transponder sends are prepared by each ** at ability ready for receiving, and each transponder sends them, its transponder, and the corresponding receiver for immobilizers memorize is in agreement. Operation of a car is attained only when the identification code for immobilizers by which the identification code for immobilizers which all transponders send by carrying out like this, respectively was set to the car side, respectively is in agreement. Therefore, when at least one code for immobilizers is not in agreement, operation of a car can presuppose that it is impossible.

[0059] (6) A power transmission means is a car antitheft device given in (5) prepared corresponding to

the number of seats prepared in the car. [two or more] Since the power transmission means is formed in all the seats established in the car, unless the crew who equipped all seats with the proper transponder boards, operation of a car serves as impossible.

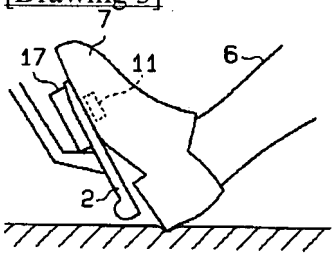
[0060]

[Effect of the Invention] Unless the object which crews other than an ignition key have carried out is taken according to invention of claims 1, 2, and 3 of the above-mentioned configuration, the effectiveness of not riding away with a car is done so.

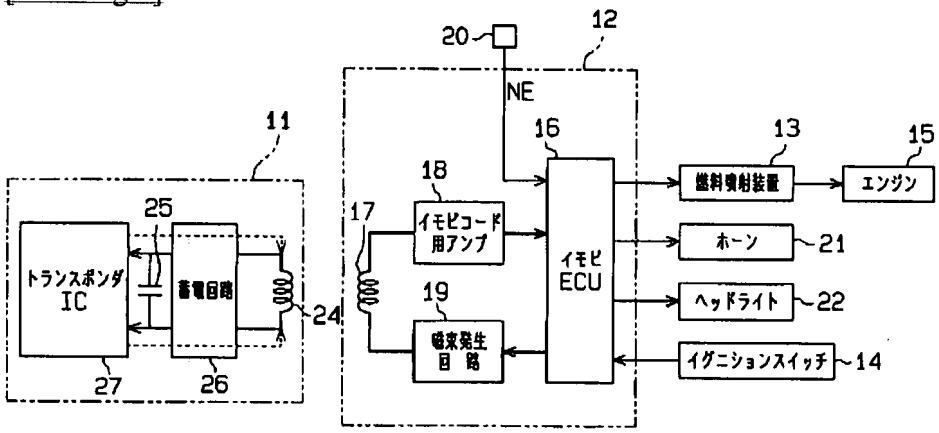
[0061] Moreover, according to invention of claim 2 and claim 3, it can be made to be able to run to the distance in which harm does not befall crew, and a car can be stopped.

DRAWINGS

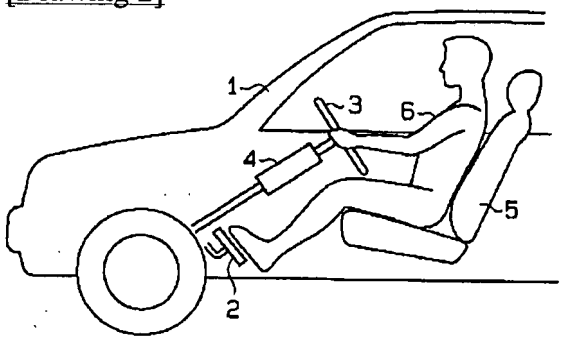
[Drawing 3]



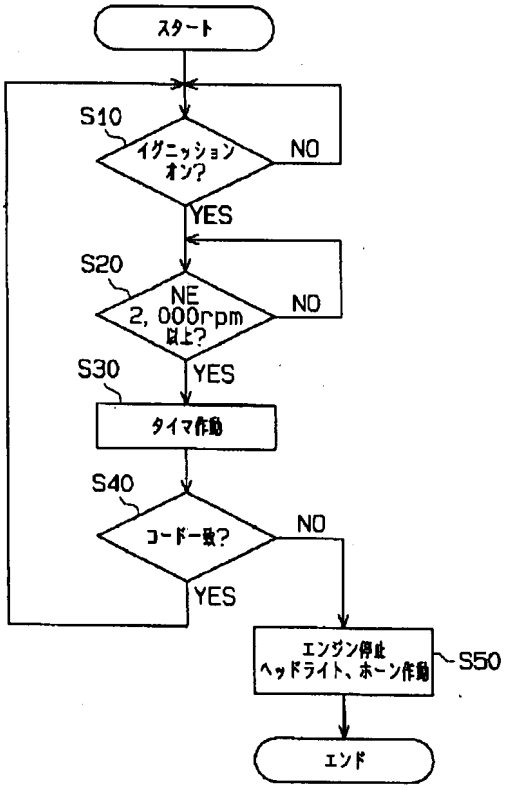
[Drawing 1]



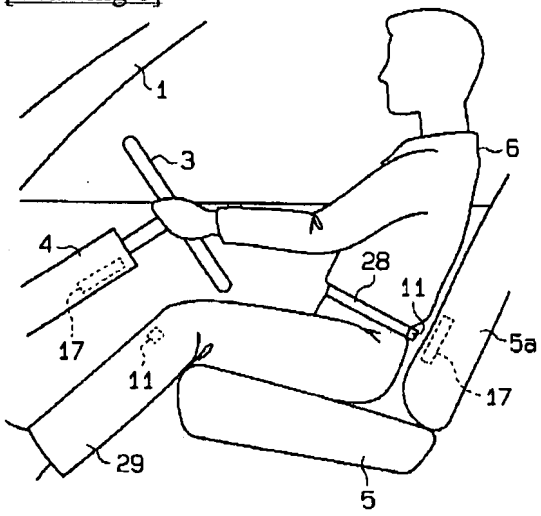
[Drawing 2]



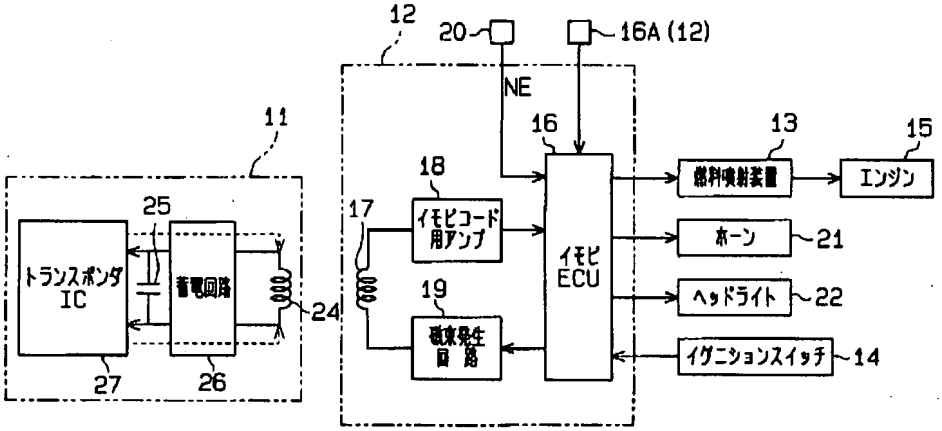
[Drawing 4]



[Drawing 6]



[Drawing 5]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